REMARKS/ARGUMENTS

In response to the Office Action dated April 21, 2004, claim 11 is amended. Claims 1-31 are now active in this application. No new matter has been added.

The indication that claims 1-10 and 12-31 are allowable, and that claim 11 would be allowable if rewritten in independent form including all the limitations of the base claim and any intervening claims is acknowledged and appreciated.

OBJECTION TO CLAIMS

Claims 3 and 5 stand objected to for having minor informalities. To address the Examiner's objection, claims 3 and 5 are amended as suggested by the Examiner.

REJECTION OF CLAIMS UNDER 35 U.S.C. § 112, SECOND PARAGRAPH

Claim 11 rejected under 35 U.S.C. § 112, second paragraph, as being indefinite. The Examiner notes that "said conversion vector" lacks antecedent support. By this response, the noted point of indefiniteness has been appropriately addressed. Therefore, it is respectfully urged that the rejection be withdrawn.

OBJECTION TO THE DRAWINGS

The Examiner objects to the drawings, requiring that "***means for making test***" and "***means for preventing***", recited in claim 10, and "***means for making a test***" and "***means for excluding***", recited in claim 11, must be shown in the drawings or cancelled from the claims.

The objection is respectfully traversed.

The features that the Examiner objects to as not being shown in the drawings are clearly disclosed in the "modification" set forth in the specification from page 22, line 8 to page 23, line 9, and clearly shown in Fig. 8.

That is, according to the embodiment II of the present invention, the matrix calculator 420 of Fig. 8 first calculates the common correlation matrix Φ, and performs an eigen-analysis of the correlation matrix Φ to find eigenvalues $\{\lambda_j | j=1,2, \ldots, M\}$ and eigenvectors $\{e_j | j=1,2, \ldots, M\}$. Moreover, the matrix calculator 420 calculates a conversion matrix Λ as follows:

$$\Lambda = \left[\frac{e_1}{\sqrt{\lambda_1}} \frac{e_2}{\sqrt{\lambda_2}} \bullet\bullet\bullet \frac{e_M}{\sqrt{\lambda_M}} \right]^T$$

However, if the level of eigenvalues is close to that of noises, this means that the output of the signal converter 440 contains noises but hardly includes signal components.

The modification of the present invention is provided for reducing the amount of the signal converter's calculations with the noise level suppressed and is described from page 22, line 14 to page 23, line 9.

In this modification, if any eigenvalue(s) exist(s) that is (or are) lower in level than a predetermined value, then the signal(s) converted with the low-level eigenvalue(s) and corresponding eigenvector(s) is (or are) not used for the subsequent process. Specifically, as shown in Fig. 8, if the level of eigenvalue, for example, λ_2, is as low as the noise levels, then the signal converter 440 excludes the level of eigenvalue, for example, λ_2, that is as low as the noise levels, and outputs a conversion matrix Λ' without the element using eigenvalueλ_2 as follows:

$$\Lambda' = \left[\frac{e_1}{\sqrt{\lambda_1}} \frac{e_3}{\sqrt{\lambda_3}} \bullet\bullet\bullet \frac{e_M}{\sqrt{\lambda_M}} \right]^T$$

In response to the conversion vectorΛ', the signal converter 440 performs a signal conversion as follows:

$$[x1' \; x3' \; \ldots \; xM']^T = \Lambda'^H [x1 \; x3 \; \ldots \; xM']^T \qquad \text{[equation 1]}$$

The signal converter 440 outputs the converted signals.

As clearly shown in the equation 1, because the outputted signals from the signal converter 440 do not include the signal(s) associated with eigenvalue(s) that is (are) judged to be the low level eigenvalue, such as the signal associated with λ_2, the number of signals to be processed by the adaptive array signal processors 100c is equal to or less than M. This contributes to the reduction of the processing load in the adaptive array signal processors 100c.

This feature of the modification set forth above, which is referred to as "weak signal excluding strategy" in the specification, corresponds to the processes of the signal converter 440 shown in Fig. 8.

As clearly disclosed in the second paragraph of the specification on page 23 lines 4-9, the weak signal excluding strategy can be used in an upstream path of the matched filters (MFi 111) (see Figs. 5, 7, and 10) in any adaptive array antenna-based system according to the present invention.

In other words, assuming that an element capable of performing the weak signal excluding strategy of the signal converter 440 is added to the upstream path of, for example, each of the matched filters MFi 111, the element can perform the features corresponding to the "***means for making a test***" and "***means for preventing***" of claim 10 and the "***means for making a test***" and "***means for excluding***" of claim 11.

Specifically, as shown in this paragraph, the element makes a test to see if a level of a signal applied to each of the matched filters MFi 111 is as low as noises, whose process

corresponds to the "***means for making a test***". If the element determines that the signal(s) has the level as low as the noises, then it prevents the determined signal(s) from being used in a subsequent stage, for example, from passing to the matched filters MFi 111, whose process corresponds to the "**means for preventing**" or "***means for excluding***".

In view of the above, it is believed clear that "***means for making test***" and "***means for preventing***", recited in claim 10, and "***means for making a test***" and "***means for excluding***", recited in claim 11, are shown in the drawings. Consequently, withdrawal of the objection to the drawings is respectfully solicited.

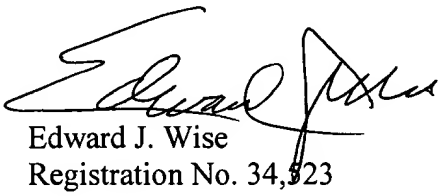
CONCLUSION

Accordingly, it is urged that the application, as now amended, is in condition for allowance, an indication of which is respectfully solicited. If there are any outstanding issues that might be resolved by an interview or an Examiner's amendment, Examiner is requested to call Applicants' attorney at the telephone number shown below.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

McDERMOTT WILL & EMERY



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